

CLAIMS:

What is claimed is:

1. A method for adjoining at least two protective barriers on a processing element comprising:
  - defining a transition region on said processing element, wherein said transition region comprises an overlap of a first protective barrier and a second protective barrier;
  - applying said first protective barrier to a first region of said processing element, said first region comprising said transition region;
  - treating a second region of said processing element in order to improve adhesion of said second protective barrier, said second region comprising said transition region; and
  - applying said second protective barrier to said second region.
2. The method as recited in claim 1, wherein said transition region comprises at least a portion of an edge.
3. The method as recited in claim 2, wherein said edge is characterized by at least one edge radius.
4. The method as recited in claim 3 further comprising forming said edge, wherein said edge comprises one edge radius, and said edge radius ranges from 0.5 mm to 5 mm.
5. The method as recited in claim 4, wherein said edge radius ranges from 0.5 mm to 2 mm.
6. The method as recited in claim 1, wherein said first protective layer and said second protective layer comprise at least one of a surface anodization, a coating formed using plasma electrolytic oxidation, and a spray coating.

7. The method as recited in claim 1, wherein said first protective layer and said second protective layer comprise at least one of alumina, carbon, silicon carbide, silicon, quartz, Teflon, Vespel, and Kapton.

8. The method as recited in claim 1, wherein said first protective barrier and said second protective barrier comprise at least one of a III-column element and a Lanthanone element.

9. The method as recited in claim 1, wherein said first protective barrier and said second protective barrier comprise at least one of Yttria ( $Y_2O_3$ ),  $Sc_2O_3$ ,  $Sc_2F_3$ ,  $YF_3$ ,  $La_2O_3$ ,  $CeO_2$ ,  $Eu_2O_3$ , and  $DyO_3$ .

10. The method as recited in claim 1, wherein said first protective barrier comprises a surface anodization, and said second protective barrier comprises a spray coating.

11. The method as recited in claim 1, wherein said treating comprises grit blasting.

12. A processing element for a processing system comprising:  
a first protective barrier coupled to a first region on said processing element; and

a second protective barrier coupled to a second region on said processing element,

wherein said first region and said second region overlap to form a transition region.

13. The processing element as recited in claim 12, wherein said second region is treated to improve the adhesion of said second protective barrier.

14. The processing element as recited in claim 13, wherein said treating comprises grit blasting.

15. The processing element as recited in claim 12, wherein said transition region comprises at least a portion of an edge.

16. The processing element as recited in claim 15, wherein said edge is characterized by at least one edge radius.

17. The processing element as recited in claim 16, wherein said edge comprises one edge radius, and said edge radius ranges from 0.5 mm to 5 mm.

18. The processing element as recited in claim 17, wherein said edge radius ranges from 0.5 mm to 2 mm.

19. The processing element as recited in claim 12, wherein said first protective layer and said second protective layer comprise at least one of a surface anodization, a coating formed using plasma electrolytic oxidation, and a spray coating.

20. The processing element as recited in claim 12, wherein said first protective layer and said second protective layer comprise at least one of alumina, carbon, silicon carbide, silicon, quartz, Teflon, Vespel, and Kapton.

21. The processing element as recited in claim 12, wherein said first protective barrier and said second protective barrier comprise at least one of a III-column element and a Lanthanum element.

22. The processing element as recited in claim 12, wherein said first protective barrier and said second protective barrier comprise at least one of Yttria ( $Y_2O_3$ ),  $Sc_2O_3$ ,  $Sc_2F_3$ ,  $YF_3$ ,  $La_2O_3$ ,  $CeO_2$ ,  $Eu_2O_3$ , and  $DyO_3$ .

23. The processing element as recited in claim 12, wherein said first protective barrier comprises a surface anodization, and said second protective barrier comprises a spray coating.

24. The processing element as recited in claim 12, wherein the first and second protective barriers comprise the same material.

25. The processing element as recited in claim 12, wherein the first and second protective barriers comprise different materials.